Executive Summary of the SR 69 HES

A Hazard Elimination Study (HES) was performed on the section of State Route 69 between mile posts 290 and 292. This is a four-lane roadway with a yellow painted median. There exist seven crossroads within the study section, all are stop controlled. The posted speed limit in this area is 55 miles per hour.

There have been a total of 126 reported collisions in this section between October 2000 and October 2005. (*Six collisions involved fatalities and 35 involved injury or possible injury)*
Of the six fatal collisions, four were crossover collisions and two angle/left turn collisions. Three of the four crossover collisions listed drugs or DUI as a contributing factor, the other listed reckless driving as a contributing factor.

A thorough review of the Arizona Traffic Accident Report indicated six collision types. These collision types are:

1. Rear End Collisions: 37 collisions (29%)
2. Median Crossover Collisions: 23 collisions (18%)
3. Angle/Left Turn Collisions: 22 collisions (17%)
4. Collisions Involving Deer: 22 collisions (17%)
5. Run Off Roadway Collisions: 5 collisions (4%)
6. Other Collisions: 17 collisions (13%)

The following table lists the potential mitigation measures for the type of collision with pros and cons for each.

Collision Type	Potential Measure	Pros	Cons/Inapplicability to Study Area
Rear End	Reflective Signing	1. Warns motorists of roadway conditions	1. No discernible darkness pattern in collisions 2. May increase fixed object collision
Run Off Roadway	Longitudinal Rumble Strips	1. Alerts inattentive drivers. 2. Mitigates some run-off-road collisions	1. Noise
Median Cross Over	Centerline Rumble Strips	1. Alerts inattentive drivers 2. Mitigates some crossing over center line type collisions	1. Mitigates some collisions involving inattentive driver
	Recessed Pavement Markings	1. Illuminates travel lanes	1. No discernible darkness pattern in collisions
	High Tension Cable Median Barrier	1. Eliminates conflicting movements at minor roads 2. Mitigates crossover collisions 3. Reduces severity of collisions reduces 4. Easy to install and uninstall	1. High maintenance cost 2. Intersection widening needed 3. Fixed object collision frequency may increase 4. Emergency vehicle response time increases 5. Impacts operation of existing signalized intersections 6. Maintenance of end treatments [1]

Median Crossover		5. Restricts access	7. Restricts access 8. May impede snow removal
	F – Shaped Concrete Median Barrier	1. Eliminates conflicting movements at minor roads 2. Mitigates crossover collisions 3. Reduces severity of collisions reduces 4. Restricts access	1. High implementation cost 2. Drainage improvements necessary 3. Fixed object collision frequency may increase 4. Emergency vehicle response time increases 5. Impacts operation of existing signalized intersections 6. Maintenance of end treatments [1] 7. Restricts access
Left Turn/Angle	Median Islands In Cross Streets To Restrict Access To Right In/Right Out	1. Eliminates some conflicting movements 2. Restricts access	1. Restricts access 2. Impacts operation of existing signalized intersections
	Two Way Left Turn Lane	1. Refuge for left turning vehicles 2. Reduces the necessary intersection sight distance	1. Requires advanced maneuvering 2. Creates speed differential [2] 3. Can introduce other types of collisions
	Traffic Signals	1. Mitigates left turn/angle collisions	1. May increase other type of collisions
	Curbed Median	1. Mitigates left turn/angle collisions 2. Restricts access	1. Unable to redirect errant vehicles 2. Does not mitigate median crossover collisions 3. Drainage improvements necessary 4. High implementation cost 5. Restricts access 6. Vaulting may occur
All	Reduction in Speed Limits	1. Lowers speed	1. Creates speed differential [2] 2. Promotes weaving 3. Introduces other collision types
	Photo Radar	1. Enforces posted speed	1. Does not mitigate reckless driving

With the information listed above it has been determined that a concrete 32 inch F-shaped barrier in the center of the existing median would be the preferred mitigation for the median crossover and angle/left turn collisions. This barrier would be installed within the study limits with one opening. This opening would be signalized when signals warrants [3] were met. Once comments are gathered on the study, ADOT is prepared to begin final design and would expect construction to begin soon after the completion of the design.

1. End Treatments – A protective device placed at the end of barriers to mitigate damage in the event of a collision.
2. Speed Differential – The difference in speed between faster and slower moving traffic.
3. Signal Warrants – 8 warrants or tests that one or more must be met to justify the installation of a traffic signal